

REMARKS

The specification has been amended to correct typographical errors only, no new subject matter has been added. Claim 1 has been amended. No claims have been canceled or added. Claims 1, 3, 4, and 7-27 are currently pending in the case. Further examination and reconsideration of the presently claimed application are respectfully requested.

Allowed and Allowable Subject Matter

Applicant acknowledges and appreciates the Examiner's allowance of claims 25-27. In addition, claims 4, 7, 10-12, 17, 20 and 24 were deemed to contain allowable subject matter. Applicant sincerely appreciates the Examiner's recognition of the patentable subject matter recited in these claims; however, as will be set forth below, Applicants believe independent claims 1, 13, 19, and 21 are patentably distinct from the cited art and in condition for allowance. In addition, Applicants believe dependent claims 4, 7, 10-12, 17, 20 and 24 are also patentably distinct for at least the same reasons as their respective base claim.

Section 102 Rejection

Claims 1, 3, 8, 9, 13-16, 18, 19, and 21-23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application No. 2004/0233755 to Bessho et al. (hereinafter referred to as "Bessho"). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. Bessho does not disclose all limitations of claims 1, 3, 8, 9, 13-16, 18, 19, and 21-23, some distinctive limitations of which are set forth in more detail below.

Bessho does not disclose a magnetic random access memory (MRAM) device with circuitry configured to independently vary amplitude or the length of time current is applied along one or more conductive lines which are used to set magnetization states of magnetic elements within the device. Amended claim 1 recites:

A magnetic random access memory device, comprising ... circuitry configured to independently vary aspects of current applications along one or more of the conductive lines, wherein the aspects comprise at least one of: an amount of current applied to the one or more conductive lines and a length of time current is applied to the one or more conductive lines.

To support the anticipation rejection of claim 1, the Examiner cites Figs. 5 and 9 and paragraphs [0092]-[0096] of Bessho as teaching circuitry which is configured to vary the amount and length of time current is applied to conductive lines of the magnetic memory device described therein. However, such interpretations of Bessho's teachings are traversed.

In particular, Bessho teaches changing the direction (i.e., polarity) current is applied along word lines and bit lines of the magnetic memory device described therein, but there is no teaching or suggestion within Bessho of varying the durations and/or the magnitude of the applied current, as is emphasized in Figs. 5, 6, and 9-11. The Examiner appears to surmise that the application of current in different directions (i.e., when $i > 0$ or $i < 0$) and/or the application of no current (i.e., when $i = 0$) as taught in Bessho infers a variation of the amount of applied current. On the contrary, the reference of positive and negative current simply refers to the polarity of the applied current (i.e., the direction the current is applied along a conductive line), but there is no teaching or suggestion that the magnitudes of their values are different. Furthermore, the absence of applied current cannot offer variation to the amount of current applied to a conductive line. In particular, the absence of current means no current is applied to the line and, therefore, cannot be part of a variation of an amount of applied current. Consequently, Bessho fails to anticipate the limitations of claim 1.

Bessho does not disclose an MRAM device having a storage circuit which includes one or more magnetic elements, is distinct from an MRAM array within the device, and is configured to store parameter settings characterizing applications of current to operate the MRAM array. Claim 13 recites:

A device, comprising: a magnetic random access memory (MRAM) array and a first storage circuit distinct from the MRAM array, wherein the first storage circuit comprises one or more magnetic elements, and wherein the first storage circuit is configured to store, within the magnetic elements, parameter settings characterizing applications of current to operate the magnetic random access memory array.

Bessho teaches the well-known configuration of MRAM magnetic elements to store a bit of information in either of two logic states in paragraphs [0036] -[0038] (cited in the Office Action as teaching the limitations of claim 13). Such information, however, does not correlate to parameter settings characterizing applications of current to operate the MRAM array. In addition, the MRAM magnetic elements are not distinct from the MRAM array itself. Consequently, Bessho fails to anticipate the limitations of claim 13.

Bessho does not disclose an MRAM device with circuitry configured to terminate an application of current along one or more of conductive lines before magnetization states of one or more magnetic elements selected for a write operation of the device are changed. Claim 19 recites in part: “[a] magnetic random access memory device, comprising ... circuitry configured to terminate an application of current along one or more of the conductive lines before magnetization states of one or more magnetic elements selected for a write operation of the device are changed.” The Examiner cites paragraph [0005] of Bessho as well as the word line current, bit line current, and recording state illustrated in Fig. 5 as teaching the aforementioned limitations of claim 19. Such an interpretation of Bessho’s teachings, however, is traversed. Rather, Bessho simply teaches that current may be applied to the bit lines and words lines to change the logical value of the memory cells (i.e., for write operations of the memory device). There is no teaching or suggestion of ceasing an application of current along either of the bit lines or word lines prior to changing magnetization states of one or more magnetic cells selected for a write operation and, as such, there is no motivation for Bessho to configure its circuitry for such a process. Consequently, Bessho does not anticipate the limitations of claim 19.

Bessho does not teach or suggest using the magnetic memory device described therein for determining a write pulse amplitude for a magnetic junction. Claim 21 recites in part: “[a] method, comprising ... determining a write pulse amplitude for the magnetic junction based on a difference between a current level measured during the step of writing and a current level measured not during the step of writing.” Bessho does not teach or suggest the magnetic memory device described therein as including a means for monitoring current levels supplied from a power source during a write operation of a magnetic junction. As such, the statement on page 5 of the Office Action “... the apparatus discussed above would perform the method claims 21-23” is traversed.

Even if, for the sake of argument, Bessho taught the aforementioned configuration, there is no teaching or suggestion within Bessho of determining a write pulse amplitude for a magnetic junction based on a difference between a current level measured during the step of writing and a current level measured not during the step of writing. Consequently, there is no teaching within Bessho to perform the method recited in claim 21. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. Hence, Bessho fails to anticipate the limitations of claim 21.

For at least the reasons stated above, Bessho fails to anticipate the limitations of independent claims 1, 13, 19, and 21. In addition, Bessho fails to anticipate the limitations of dependent claims 3, 8, 9, 14-16, 18, 22, and 23 for at least the same reasons as their respective base claim. Accordingly, removal of this rejection is respectfully requested.

CONCLUSION

This response constitutes a complete response to the issues raised in the Office Action mailed April 3, 2006. In view of the remarks herein, Applicants assert that pending claims 1, 3, 4, and 7-27 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees, which may be required, or credit any overpayment, to Daffer McDaniel LLP Deposit Account No. 50-3268/5298-17100.

Respectfully submitted,
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